

AMENDMENTS TO THE CLAIMS (THIS LISTING REPLACES ALL PRIOR LISTINGS):

1-7. (canceled)

8. (currently amended) The method of claim 35, 36, 37, 38, 39, 40, or 41, wherein the first radio network controller comprises a default controller for the first radio node, the method further comprising,

routing, by the first ~~or second~~ radio node, ~~a fourth plurality of data packets~~[[,]] received from a third access terminal ~~without that does not have~~ an existing session[[,]] to ~~the first radio network controller a default RNC with whom the first or second radio node is associated.~~

9. (canceled)

10. (previously presented) The method of claim 35 or 36, wherein the first or second radio node receives forward link traffic channel packets from more than one radio network controller.

11. (previously presented) The method of claim 35 or 36, wherein the first or second radio node sends reverse link traffic channel packets to more than one radio network controller.

12. (currently amended) The method of claim 35 or 36, wherein traffic channel radio resources are managed in the first and second radio nodes and [[a]] the first or second radio network controller requests radio resources from [[a]] the first or second radio node before adding any of its sectors to a traffic channel.

13. (currently amended) The method of claim 35 or 36, wherein the first and second radio network controllers reside in different locations and are connected via by a metropolitan-area network.

14. (currently amended) The method of claim 36, 42 or 43, in which the first session is transferred from the first ~~or second~~ radio network controller in one subnetwork to another radio network controller in another subnetwork based upon a predetermined criterion.
15. (currently amended) The method of claim 14, wherein the session transfer is triggered by the first access terminal upon detection of a subnetwork change.
16. (currently amended) The method of claim 14, wherein the session transfer is triggered by ~~the network~~ a radio network controller.
17. (previously presented) The method of claim 35, 36, or 37 further comprising, at the first radio network controller, selecting a packet data serving node to serve the first access terminal.
18. (currently amended) The method of claim 35 further comprising, at the first radio network controller, using a mobility manager to maintain a current position location information of the first access terminal.
19. (currently amended) The method of claim 36, 39, 42, 43, or 44 further comprising, using an RNC resource control agent to assign sessions to the first and second radio network controllers.
20. (previously presented) The method of claim 19, wherein the RNC resource control agent resides on a separate server.
21. (currently amended) The method of 35, 39, or 48, wherein each radio node in the radio access network is associated with a default radio network controller, the method further comprising,

determining, by an RNC resource control agent, an association between a radio node ~~the~~ RN's and ~~their~~ its default radio network controller ~~RNC's~~.

22. (previously presented) The method of claim 19 further comprising, performing, by the RNC resource control agent, load balancing in assigning sessions to radio network controllers.
23. (previously presented) The method of claim 19, further comprising, selecting, by the RNC resource control agent, a new RNC in network-initiated dormant handoffs.
24. (previously presented) The method of claim 19, wherein the RNC resource control agent function is distributed among the radio network controllers and radio nodes, and the radio network controllers and the radio nodes continuously communicate resource information to each other to enable individual network nodes to make session assignment decisions on their own.
25. (currently amended) The method of claim 19, further comprising, maintaining, by the ~~RCN~~ RNC resource control agent, session information for all sessions under its control.
26. (previously presented) The method of claim 35, 39, or 42, wherein the radio network controllers also include a PDSN function.
27. (previously presented) The method of claim 26, wherein the PDSN function includes Simple IP, Mobile IP and AAA client functions.
- 28-34. (canceled)

35. (currently amended) A method comprising,
~~in connection with a mobile wireless network including a first and a second radio network controller and a first and a second radio node,~~
enabling many-to-many communication among radio network controllers and radio nodes through a packet network,
~~establishing a first traffic channel between a first mobile access terminal and the a first radio network controller of the network through a first radio node when the first access terminal is in a coverage area of the first radio node,~~
~~establishing a second traffic channel between a second access terminal and a second radio network controller of the network through a second radio node when the second access terminal is in a coverage area of the second radio node, and~~
~~sending and receiving a first plurality of packets over the first traffic channel, the first plurality of packets traveling between the first radio node and the first radio network controller without passing through the second radio network controller,~~
~~establishing a second traffic channel between a second mobile access terminal and the second radio network controller,~~
~~sending and receiving a second plurality of packets over the second traffic channel, the second plurality of packets traveling between the second radio node and the second radio network controller without passing through the first radio network controller, and~~
~~maintaining the first traffic channel as between the first access terminal and the first radio network controller without requiring the first traffic channel to pass through another radio network controller when the first access terminal moves from a coverage area of the first radio node to a coverage area of the second radio node,~~
~~sending and receiving a third plurality of packets over the first traffic channel, the third plurality of packets traveling between the second radio node and the first radio network controller without passing through the second radio network controller.~~

36. (currently amended) The method of claim 35 further comprising,

establishing a first session for the first ~~mobile~~ access terminal on the first radio network controller ~~via~~ through the first radio node,

~~establishing a second session for the second mobile access terminal on the second radio network controller via the second radio node, and~~

maintaining the first session on the first radio network controller as the first access terminal moves from the coverage area of the first radio node to the coverage area of the second radio node, ~~to the coverage area of the second radio node while in dormant state.~~

37. (currently amended) The method of claim 35 further comprising,

sending an access channel message from the first ~~mobile~~ access terminal to the first radio network controller ~~via~~ through the second radio node, ~~and the second radio network controller.~~

38. (currently amended) The method of claim 35 further comprising,

signaling between the first radio network controller and the second radio network controller, ~~when establishing a traffic channel between the first radio network controller and the first access terminal via the second radio node.~~

39. (currently amended) The method of claim 35 ~~wherein the network comprises an internet protocol network, the method~~ further comprising,

routing access channel packets received from the ~~first~~ access terminal at the second radio node to the first radio network controller by determining an ~~IP~~ Internet protocol address of the first radio network controller ~~using a session identifier.~~

40. (currently amended) The method of claim 39 wherein,

the Internet protocol address is determined using a ~~the~~ session identifier.

41. (currently amended) The method of claim 39 40 further comprising,

storing in the ~~first and second radio nodes~~ a ~~mapping table for mapping information to~~
~~map a~~ the session identifier of the first access terminal to ~~the IP~~ an Internet protocol address of
the first radio network controller,

~~reading using the stored information at the second radio node the to determine the~~
~~Internet protocol address of the first radio network controller using a session identifier included~~
~~in an access channel message and looking up the IP address of the first radio network controller,~~
~~and encapsulating at least one of the access channel packets in an IP packet with a destination~~
~~address equal to the IP address of the first radio network controller. received from the first access~~
~~terminal.~~

42. (currently amended) The method of claim 35 further comprising,
establishing, ~~via through~~ the first radio node, a first session for ~~the first a third~~ mobile
access terminal on a selected radio network controller, ~~the selected radio network controller~~
~~comprising one of either~~ the first radio network controller or the second radio network controller.

;

~~establishing, via the second radio node, a second session for the second mobile access~~
~~terminal on a selected radio network controller, the selected radio network controller comprising~~
~~the first radio network controller or the second radio network controller, and~~

~~maintaining the first session on the selected radio network controller as the first access~~
~~terminal moves from the coverage area of the first radio node to the coverage area of the second~~
~~radio node while in dormant state.~~

43. (currently amended) The method of claim 42 further comprising,
selecting the ~~selected~~ radio network controller ~~in the first radio node~~ based at least on the
loading of the first and second radio network controllers.

44. (currently amended) The method of claim 42 further comprising,

selecting the ~~selected~~ radio network controller ~~in the first radio node~~ based at least on the routing distance between the first radio node and the first and second radio network controllers.

45. (previously presented) The method of claim 35 further comprising,
employing a chassis-based hardware platform with multiple server cards to implement each of the first and second radio network controllers.
46. (currently amended) The method of claim 45 further comprising,
routing incoming packets to ~~appropriate~~ server cards based on ~~a~~-session identifiers using an I/O card.
47. (currently amended) The method of claim 46 wherein,
~~the session identifiers comprises~~~~a~~ 1xEV-DO UATI.
48. (currently amended) The method of claim 35 further comprising,
establishing a first association between the first radio node and the first radio network controller, and
establishing a second association between the first radio node and the second radio network controller,
~~establishing a third association between the second radio node and the first radio network controller, and~~
~~establishing a fourth association between the second radio node and the second radio network controller.~~
49. (canceled)
50. (currently amended) A ~~system~~ ~~mobile wireless network~~ comprising,

radio nodes each configured to receive data from and transmit data to access terminals located in a coverage area associated with the radio node;

radio network controllers each configured to receive data from and transmit data to access terminals through the radio nodes; and

a first radio network controller,

a second radio network controller,

a first radio node,

a second radio node,

a packet network enabling many-to-many communication among the radio network controllers and the radio nodes, wherein:

a first traffic channel is established between a first access terminal and a first radio network controller of the network through a first radio node when the first access terminal is in a coverage area of the first radio node,

a second traffic channel is established between a second access terminal and a second radio network controller of the network through a second radio node when the access terminal is in a coverage area of the second radio node, and

the first traffic channel is maintained between the first access terminal and the first radio network controller without requiring the first traffic channel to pass through another radio network controller when the first access terminal moves from a coverage area of the first radio node to a coverage area of the second radio node.

a first mobile access terminal that is associated with a first traffic channel established with the first radio network controller, the first mobile access terminal sending and receiving a first plurality of packets over the first traffic channel, wherein the first plurality of packets travel between the first radio node and the first radio network controller without passing through the second radio network controller, and

a second mobile access terminal that is associated with a second traffic channel established with the second radio network controller, the second mobile access terminal sending and receiving a second plurality of packets over the second traffic channel, wherein the second

~~plurality of packets travel between the second radio node and the second radio network controller without passing through the first radio network controller,~~

~~wherein the first traffic channel is maintained as the first access terminal moves from a coverage area of the first radio node to a coverage area of the second radio node, the first access terminal sending and receiving a third plurality of packets over the first traffic channel;~~

~~and wherein the third plurality of packets travel between the second radio node and the first radio network controller without passing through the second radio network controller.~~

51. (new) The system of claim 50 wherein the network comprises an Internet protocol network.

52. (new) The system of claim 51 wherein each of the radio network controllers and each of the radio nodes are associated with a single subnetwork.

53. (new) The method of claim 36 wherein the first session is maintained when the first access terminal moves to the coverage area of the second radio node while the first access terminal is in a dormant state.

54. (new) The method of claim 38 wherein the signaling occurs when the first access terminal moves towards the coverage area of the second radio node.

55. (new) The method of claim 40 wherein the session identifier comprises a 1xEV-DO UATI.

56. (new) The method of claim 41 further comprising,
encapsulating at least one of the access channel messages in an Internet protocol packet with a destination address equal to the Internet protocol address of the first radio network controller.

57. (new) The method of claim 42 further comprising,
establishing, through the second radio node, a session for a third access terminal on a
selected one of either the first radio network controller or the second radio network controller.

58. (new) The method of claim 42 further comprising,
maintaining the first session on the selected one of either the first radio network
controller or the second radio network controller as the access terminal moves from the coverage
area of the first radio node.

59. (new) The method of claim 48 further comprising,
establishing a third association between the second radio node and the first radio network
controller, and
establishing a fourth association between the second radio node and the second radio
network controller.

60. (new) The method of claim 35 wherein,
when the first access terminal is in the coverage area of the first radio node, data packets
received at the first radio node on the first traffic channel from the first access terminal are sent
to a network address of the first radio network controller over the network.

61. (new) The method of claim 35 wherein,
when the first access terminal is in the coverage area of the first radio node, data packets
destined for the first access terminal are sent by the first radio network controller to a network
address of the first radio node over the network.

62. (new) The method of claim 35 wherein,
when the second access terminal is in the coverage area of the second radio node, data

packets received at the second radio node on the second traffic channel from the second access terminal are sent to a network address of the second radio network controller over the network.

63. (new) The method of claim 35 wherein,
when the second access terminal is in the coverage area of the second radio node, data packets destined for the second access terminal are sent by the second radio network controller to a network address of the second radio node over the network.

64. (new) The method of claim 35 wherein,
when the first access terminal is in the coverage area of the second radio node, data packets received at the second radio node from the first access terminal are sent to the network address of the first radio network controller over the network without traversing the second radio network controller.

65. (new) The method of claim 35 wherein,
when the first access terminal is in the coverage area of the second radio node, data packets destined for the first access terminal are sent by the first radio network controller to the network address of the second radio node over the network without traversing the second radio network controller.

66. (new) The method of claim 35, wherein the radio node receives paging requests from more than one radio network controller.

67. (new) A method comprising:
simultaneously enabling a radio node to serve both a first dormant access terminal and a second dormant access terminal, the first access terminal having a session with a first radio network controller and the second access terminal having a session with a second radio network

controller, the radio node being interconnected with the radio network controllers using a packet network.

68. (new) The method of claim 67 further comprising,
maintaining the session on the first radio network controller as the first access terminal moves from a coverage area of the radio node.

69. (new) The method of claim 67 further comprising,
maintaining the session on the second radio network controller as the second access terminal moves from a coverage area of the radio node.

70. (new) The method of claim 67 further comprising,
signaling between the first radio network controller and the second radio network controller.

71. (new) The method of claim 67 further comprising,
routing access channel packets received from the access terminals by determining an Internet protocol address of the respective radio network controllers.

72. (new) The method of claim 71 wherein,
the Internet protocol address is determined using a session identifier.

73. (new) The method of claim 72 further comprising,
storing in the radio node information to map a session identifier of the first access terminal to an Internet protocol address of the first radio network controller,
using the stored information at the radio node to determine the Internet protocol address of the first radio network controller using a session identifier included in an access channel message received from the first access terminal.

74. (new) The method of claim 67 further comprising,
establishing, through the radio node, a first session for a third access terminal on a
selected one of either the first radio network controller or the second radio network controller.

75. (new) The method of claim 74 further comprising,
selecting the radio network controller based at least on the loading of the first and second
radio network controllers.

76. (new) The method of claim 74 further comprising,
selecting the radio network controller based at least on the routing distance between the
first radio node and the first and second radio network controllers.

77. (new) The method of claim 74 wherein,
the session identifiers comprise 1xEV-DO UATI.

78. (new) The method of claim 67 further comprising,
establishing a first association between the first radio node and the first radio network
controller, and
establishing a second association between the first radio node and the second radio
network controller.

79. (new) A system comprising:
a first radio network controller;
a second radio network controller;
a radio node interconnected with the radio network controllers using a packet network,
the radio node enabled to simultaneously serve both a first dormant access terminal and a second
dormant access terminal, first access terminal having a session with a first radio network

controller and the second access terminal having a session with a second radio network controller.

80. (new) A method comprising:

in a radio access network, serving traffic channels between at least two access terminals and at least two different radio network controllers through a single radio node, wherein data packets between an access terminal and a radio network controller do not traverse any other radio network controller, the radio node being interconnected with the radio network controllers using a packet network.

81. (new) The method of claim 80, wherein the serving comprises:

maintaining a traffic channel between an access terminal and a radio network controller when the access terminal moves from a coverage area of a first radio node to a coverage area of a second radio node.

82. (new) The method of claim 80 further comprising,

maintaining a session on a radio network controller when an access terminal moves from a coverage area of a first radio node to a coverage area of the second radio node.

83. (new) The method of claim 80 further comprising,

signaling between radio network controllers.

84. (new) The method of claim 80 further comprising,

routing access channel packets received from an access terminal by determining an Internet protocol address of the serving radio network controller.

85. (new) The method of claim 84 wherein,

the Internet protocol address is determined using a session identifier.

86. (new) The method of claim 85 further comprising,
storing in the radio node information to map a session identifier of an access terminal to
an Internet protocol address of a serving radio network controller,
using the stored information to determine the Internet protocol address of the serving
radio network controller using a session identifier included in an access channel message
received from the access terminal.

87. (new) The method of claim 80 further comprising,
establishing, through the radio node, a session for another access terminal on a selected
one of the at least two radio network controllers.

88. (new) The method of claim 87 further comprising,
selecting the radio network controller based at least on the loading of the at least two
radio network controllers.

89. (new) The method of claim 87 further comprising,
selecting the radio network controller based at least on the routing distance between the
radio node and the at least two radio network controllers.

90. (new) The method of claim 87 wherein,
the session identifiers comprise 1xEV-DO UATI.

91. (new) The method of claim 80 further comprising,
establishing a first association between the radio node and a first radio network
controller, and
establishing a second association between the radio node and a second radio network
controller.

92. (new) A system comprising:

radio nodes;

radio network controllers; and

a packet network interconnecting the radios nodes and the radio network controllers, the system enabling serving of traffic channels between at least two access terminals and at least two different radio network controllers through a single radio node, wherein data packets between an access terminal and a radio network controller do not traverse any other radio network controller.

93. (new) A method comprising:

at a radio network controller in communication with a first radio node and a second radio node through a packet network that enables many-to-many communication,

establishing a first traffic channel with a first access terminal through the first radio node when the first access terminal is in a coverage area of the first radio node, and

maintaining the first traffic channel with the first access terminal without requiring the first traffic channel to pass through another radio network controller when (a) the first access terminal moves from a coverage area of the first radio node to a coverage area of the second radio node, and (b) a second traffic channel exists between a second access terminal, in the coverage area of the second radio node, and a second radio network controller.

94. (new) The method of claim 93 further comprising,

establishing a session for the first access terminal through the first radio node when the access terminal is in the coverage area of the first radio node, and

maintaining the session as the first access terminal moves from the coverage area of the first radio node.

95. (new) The method of claim 93 further comprising,
receiving an access channel message from the first access terminal through the second
radio node.

96. (new) A machine-readable medium that stores executable instructions for use at a
radio network controller in communication with a first radio node and a second radio node
through a packet network that enables many-to-many communication, the instructions causing a
machine to:

establish a first traffic channel with a first access terminal through the first radio node
when the first access terminal is in a coverage area of the first radio node, and

maintain the first traffic channel with the first access terminal without requiring the first
traffic channel to pass through another radio network controller when (a) the first access terminal
moves from a coverage area of the first radio node to a coverage area of the second radio node,
and (b) a second traffic channel exists between a second access terminal, in the coverage area of
the second radio node, and a second radio network controller.

97. (new) The machine-readable medium of claim 96 further comprising instructions
to cause the machine to,

establish a session for the first access terminal through the first radio node when the first
access terminal is in the coverage area of the first radio node, and

maintain the session as the first access terminal moves from the coverage area of the first
radio node

98. (new) The machine-readable medium of claim 97 further comprising instructions
to cause the machine to,

receive an access channel message from the first access terminal through the second radio
node.

99. (new) An apparatus comprising:

means for establishing a first traffic channel with a first access terminal through a packet network that enables many-to-many communication and a first radio node when the first access terminal is in a coverage area of the first radio node, and

means for maintaining the first traffic channel with the first access terminal without requiring the first traffic channel to pass through another radio network controller when (a) the first access terminal moves from a coverage area of the first radio node to a coverage area of a second radio node, and (b) a second traffic channel exists between a second access terminal, in the coverage area of the second radio node, and a second radio network controller.

100. (new) The apparatus of claim 99 further comprising,

means for establishing a session for the first access terminal through the packet network and the first radio node when the first access terminal is in the coverage area of the first radio node, and

means for maintaining the session as the first access terminal moves from the coverage area of the first radio node

101. (new) The apparatus of claim 100 further comprising,

means for receiving an access channel message from the first access terminal through the second radio node and the packet network.

102. (new) A method comprising:

at a radio node in communication with a first radio network controller and a second radio network controller through a packet network that enables many-to-many communication,

routing access channel packets received from an access terminal to a selected one of either the first radio network controller or the second radio network controller by determining an Internet protocol address of a serving radio network controller.

103. (new) The method of claim 102 wherein the Internet protocol address is determined using a session identifier.

104. (new) The method of claim 103 wherein the session identifier comprises a 1xEV-DO UATI.

105. (new) The method of claim 102 further comprising,
at the radio node, storing information to map a session identifier of the access terminal to an Internet protocol address of the serving radio network controller.

106. (new) The method of claim 102 further comprising,
encapsulating at least one of the access channel messages in an Internet protocol packet with a destination address equal to the Internet address of the serving radio network controller.

107. (new) The method of claim 102, further comprising,
selecting the radio network controller based at least on the loading of the first and second radio network controllers.

108. (new) The method of claim 107, wherein the selecting is performed when an access channel packet comprises a 1xEV-DO Random Access Terminal Identifier (RATI).

109. (new) The method of claim 102 further comprising,
selecting the radio network controller based at least on the routing distance between the radio node and the first and second radio network controllers.

110. (new) The method of claim 102 wherein the radio node receives forward link traffic channel packets from more than one radio network controller.

111. (new) The method of claim 102 wherein the radio node sends reverse link traffic channel packets to more than one radio network controller.

112. (new) The method of claim 102 wherein traffic channel radio resources are managed in the radio node and the first or second radio network controller requests radio resources from the radio node before adding any of its sectors to a traffic channel.

113. (new) A machine-readable medium that stores executable instructions for use at a radio node in communication with a first radio network controller and a second radio network controller through a packet network that enables many-to-many communication, the instructions causing a machine to:

route access channel packets received from an access terminal to a selected one of either the first radio network controller or the second radio network controller by determining an Internet protocol address of a serving radio network controller.

114. (new) The machine-readable medium of claim 113 wherein the Internet protocol address is determined using a session identifier.

115. (new) The machine-readable medium of claim 114 wherein the session identifier comprises a 1xEV-DO UATI.

116. (new) The machine-readable medium of claim 113 further comprising instructions to cause the machine to,

store information to map a session identifier of the access terminal to an Internet protocol address of the serving radio network controller.

117. (new) The machine-readable medium of claim 113 further comprising instructions to cause the machine to,

encapsulate at least one of the access channel messages in an Internet protocol packet with a destination address equal to the Internet address of the serving radio network controller.

118. (new) The machine-readable medium of claim 113, further comprising instructions to cause the machine to,

select the radio network controller based at least on the loading of the first and second radio network controllers.

119. (new) The machine-readable medium of claim 118, further comprising instructions to cause the machine to,

select the radio network controller in response to an access channel that comprises a 1xEV-DO Random Access Terminal Identifier (RATI).

120. (new) The machine-readable medium of claim 113, further comprising instructions to cause the machine to,

select the radio network controller based at least on the routing distance between the radio node and the first and second radio network controllers.

121. (new) An apparatus comprising:

means for routing access channel packets received from an access terminal to a selected one of either the first radio network controller or the second radio network controller, through a packet network enabling many-to-many communication, by determining an Internet protocol address of a serving radio network controller.

122. (new) The apparatus of claim 121 further comprising,

means for storing information to map a session identifier of the access terminal to an internet protocol address of the serving radio network controller.

123. (new) The apparatus of claim 121 further comprising,
means for encapsulating at least one of the access channel messages in an Internet
protocol packet with a destination address equal to the Internet address of the serving radio
network controller.

124. (new) The apparatus of claim 121 further comprising,
means for selecting the radio network controller based at least on the loading of the first
and second radio network controllers.

125. (new) The apparatus of claim 121 further comprising,
means for selecting the radio network controller based at least on the routing distance
between the radio node and the first and second radio network controllers.

126. (new) The apparatus of claim 125 wherein the means for selecting comprises
means for selecting the radio network controller in response to an access channel that comprises
a 1xEV-DO Random Access Terminal Identifier (RATI).

127. (new) The method of claim 15 wherein the subnetwork is a 1xEV-DO subnet.

128. (new) The method of claim 26, 35, 39, or 42 wherein a radio network controller
is co-located with a radio node.